

Durham Research Online

Deposited in DRO:

25 July 2014

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Desai, R. and McFarlane, C. and Graham, S. (2015) 'The politics of open defecation : informality, body, and infrastructure in Mumbai.', *Antipode.*, 47 (1). pp. 98-120.

Further information on publisher's website:

<http://dx.doi.org/10.1111/anti.12117>

Publisher's copyright statement:

This is the peer reviewed version of the following article: Desai R., McFarlane C., and Graham S. (2014), The Politics of Open Defecation: Informality, Body, and Infrastructure in Mumbai, *Antipode*, 47 (1): 98-120, which has been published in final form at <http://dx.doi.org/10.1111/anti.12117>. This article may be used for non-commercial purposes in accordance With Wiley Terms and Conditions for self-archiving.

Additional information:

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in DRO
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full DRO policy](#) for further details.

The Politics of Open Defecation: Informality, Body and Infrastructure in Mumbai

Renu Desai, Centre for Urban Equity (CUE), CEPT University, University Road,
Navrangpura, Ahmedabad 380009, Gujarat, India. Email. desai_renu@yahoo.co.in

Colin McFarlane, Department of Geography, Durham University, DH13LE, UK.

Email: colin.mcfarlane@durham.ac.uk

Steve Graham, School of Architecture, Planning and Landscape, Newcastle University, UK

Email: Steve.graham@newcastle.ac.uk

Abstract

This paper examines the politics of open defecation by focusing on everyday intersections of the body and infrastructure in the metabolic city, which produces profoundly unequal opportunities for fulfilling bodily needs. Specifically, it examines how open defecation emerges in Mumbai's informal settlements through everyday embodied experiences, practices and perceptions forged in relation to the materialities of informality and infrastructure. It does so by tracing the micropolitics of provision, access, territoriality and control of sanitation infrastructures; everyday routines and rhythms, both of people and infrastructures; and experiences of disgust and perceptions of dignity. It also examines open defecation as embodied spatial and temporal improvisations in order to investigate the socially differentiated efforts and risks that it entails. More broadly, the paper seeks to deepen understandings of the relationship between the body, infrastructure and the sanitary/unsanitary city.

Keywords: body, defecation, informality, infrastructure, Mumbai, sanitation

Introduction

How are bodies and infrastructure related in contexts of severe urban poverty and exploitation? Or more precisely, what kinds of relations become possible, and how are they experienced, in the shifting sociomaterial configurations of infrastructures in informal neighbourhoods? Despite the vital wealth of critical research on urban infrastructures and political ecologies, critical urban and geographical research lacks understanding of the micropolitics through which infrastructures are differently made, unmade and experienced. This is an important gap, because it is in this making and unmaking that much of urban life is increasingly lived and politicized, and especially so in the growing numbers of people – in both global South and North – living in informal settlements.

Drawing on examples from fundamental infrastructures of sanitation in Mumbai, we explore in this paper a multiplicity of relationships between the body and infrastructure. Issues of access, routine, perception, and experience – in short, the lived worlds of urban infrastructure, come to the fore. Important here are practices of improvisation, too often neglected in accounts of urban infrastructure and political ecologies, which we examine in relation to different forms of open defecation. These practices of improvisation are coping mechanisms that often reproduce and deepen inequalities rather than articulate political claims such as the right to sanitation infrastructure. But these practices also, we will argue, enter into political claim-making for residents of informal neighbourhoods, whether in the form of demands for certain kinds of sanitation infrastructure, or in response to new forms of disciplining by the state, or in the ways in which residents can become divided around lines of class, religion, ethnicity or caste in response to improvisatory practices pursued by different groups.

By way of context, we want to begin with a particular and important moment in Mumbai in 2006, when the city saw the legislation of the Cleanliness and Sanitation Bye-laws which introduced punitive measures against cooking, bathing, spitting, urinating and defecating in public spaces.ⁱ While the bye-laws – which regulate a variety of other activities like littering, waste segregation, etc – are aimed at disciplining all urban residents and elevating their civic consciousness, many of the punitive measures are based on what Baviskar (2003) refers to as “bourgeois environmentalism.” This casts upper-class concerns around aesthetics, leisure and health, which usually clash with the rights of the poor, under broader, seemingly class-neutral discourses of the environmental quality of life. In introducing disciplinary action against open defecation in a city in which around 25% of residents have no or inadequate sanitation facilities (MW-YUVA 2001: 10), the bye-laws pitted the basic bodily need to empty one’s bowels against the right to a clean and sanitary environment.ⁱⁱ

These bye-laws, moreover, rest on particular conceptions of the relationship between the body and the sanitary/unsanitary city. Open defecation is prohibited under the bye-laws because it creates “public nuisance.” This includes any act or thing which “causes or is likely to cause injury, danger, annoyance or offence to the sense of sight, smelling or hearing or which is or may be dangerous to life or injurious to health or property and environment” in a public place (MCGM, 2006). Such a discourse of public nuisance casts practices of open defecation and the presence of human excreta in open spaces as offending to the city’s visual and olfactory aesthetic. This, however, privileges the sensory experiences of the urban middle-class and elites and erases the sensory experiences of the urban poor, many of whom have to contend with the offensiveness of using unbearably dirty public toilets and who might at times even turn to open defecation precisely because of this. The public nuisance discourse also ascribes open defecation as an individual’s private bodily act which is in conflict with

the city's public health and environment.ⁱⁱⁱ The significant role of infrastructures in mediating the relationship between private and public, the body and the city, and the body and bodily wastes, is thus all but absent in this discourse.

The bye-laws do include a section on the obligatory duties of the municipal government to provide "adequate community toilets" in "slum localities", however, there is no consideration of what constitutes adequate toilets. Government sanitation programs, which are setting higher targets for toilet provision than ever before, are largely restricted to "notified slums," that is, informal settlements entitled to basic services. "Non-notified slums," in which 4.5% of Mumbai's population lives, and pavement dwellers are not entitled to basic services.^{iv} Even "notified slums" comprise of a wide array of toilet blocks with different levels of cleanliness, maintenance and accessibility, leading residents to regularly or intermittently defecate in the open in many cases. Partly as a response to the lack of cleanliness and maintenance of toilets delivered under various sanitation programs in Mumbai, slum sanitation approaches have changed, introducing partnerships between the state, NGOs and communities through the Slum Sanitation Programme (SSP). However, sanitation program outcomes are still measured and publicized primarily in terms of numbers, taking a narrow conception of sanitation inadequacy. Moreover, even inadequate sanitation is often not perceived as a good enough reason for people to turn to open defecation. For instance, the CEO of a private security agency contracted to implement the bye-laws explained: "It is not that there aren't toilets but perhaps there are inadequate toilets and long lines so people just go in the open. Even women."^v This implies that people are impatient and if only they would wait in the toilet queues for their turn, Mumbai would be cleaner in this regard.

In this paper, we seek to chart out radically different conceptions of the relationship between the body and the sanitary/unsanitary city by thinking through the body's relationship to infrastructures in the metabolic city, which creates profoundly unequal opportunities for fulfilling basic bodily needs. The paper emerges from ethnographic fieldwork carried out in two informal settlements: Rafinagar, a "non-notified" settlement which comprises of an older and more established Part 1 and a newer and still expanding Part 2, in eastern Mumbai; and Khotwadi, an established and "notified" settlement in western Mumbai. The paper begins with a discussion of debates around the body, sanitation, filth and infrastructure, to lay out the intellectual context and framework for the article. By 'infrastructure', we are referring both to material configurations – toilets, water connections, etc, which of course are made and unmade through not just physical but also social, economic, political and ecological processes – and social configurations, such as women coordinating with other women to make or unmake systems that enable everyday urban life. This latter use of infrastructure includes, for instance, routinized social arrangements for using particular open spaces at particular times for defecation, and they too are infrastructures because we take infrastructure to be, expansively, systems that enable urban life to collectively take place. If this leaves us with a rather open definition of infrastructure, then that is part of what we want to achieve with the paper: to disrupt what and who we read and recognize as infrastructure by paying greater attention to the multiple ways in which systems have to be put in place to allow urban life to take place in precarious and marginalized neighbourhoods.

In the next section, we examine how open defecation emerges through everyday embodied experiences, practices and perceptions that are forged in relation to the diverse materialities of sanitation infrastructures. We do so by tracing the micropolitics of provision, access, territoriality and control of sanitation infrastructures; daily routines and rhythms, both of

people (their physiological routines and rhythms as well as those of daily living in informal settlements) and infrastructures; and experiences of disgust and perceptions of dignity.

Through a discussion of these embodied materialities of open defecation, we seek to show how the capacities of sanitation infrastructures to meet people's individual and collective needs – and thus prevent open defecation – are shaped by a multiplicity of relationships between the body and infrastructure. We also think through the body's relationship to open space in the metabolic city by interrogating practices of open defecation as embodied spatial and temporal improvisations that require considerable effort and produce particular risks.

This focus on the everyday embodied materialities of open defecation attends to the ways in which defecation and sanitation experiences, practices and perceptions are differentiated by class, income, gender, age and other social power relations as well as how they are forged in relation to urban materialities of informality and infrastructure. We conclude by discussing how our analysis deepens understandings of the relationships between the body, infrastructure and the city; how the nature of these relationships constitute urban poverty and inequality; and how the objectives of sanitation policies and programmes need to be expanded to address these relationships.

Body, Infrastructure and Open Defecation in the City

Defecation is a bodily process that is crucial to life itself. Yet, there has been scant research on open defecation despite its widespread prevalence in many cities in the global south.

Perhaps one reason for this is that open defecation is perceived to be at complete odds with the modern city. Investigations by development practitioners, journalists and scholars have of course directed attention to practices of open defecation. In this moment of a “sanitation crisis” and urgency to meet the Millennium Development Goals, their writings focus on the

dire consequences of these practices for health, women's dignity and safety, the environment, the economy and so forth, and call for appropriate sanitation interventions in terms of technology, cultural and social norms, and the differentiated needs of men, women and children (see, for eg, Bapat and Agarwal 2003; Bartlett 2003; Black and Fawcett 2008; George 2008; Jewitt 2011). However, the relationships between open defecation, the body and infrastructure in the city remain under-researched and under-theorized in these investigations. Debates around the body, sanitation, filth and infrastructure are crucial for exploring these relationships.

Scholars have argued, for instance, that the exclusion of what is considered filth, particularly human excreta, and the distancing from bodily substances and odors has been central to the ways in which modern urban citizens define themselves (Cohen 2005: xxiv; also see Barnes 2005; Corbin 1986; Laporte 2000). Architecture, urban planning, public health initiatives, and the regulation of public spaces have played a key role in this quest to protect the human senses from contact with bodily wastes, normalizing practices through which bodily functions like defecation are carried out and bodily wastes like shit are disposed. Thus, shit was increasingly relegated to the private sphere (Laporte 2000) and then was increasingly brought under public management. Attitudes to filth and cleanliness and the regulation of bodily functions and bodily wastes have thus been central to the shaping of the modern city. Yet, the bourgeois regulation of filth and cleanliness not only served to carry out vast urban improvements but also served as justification for the surveillance and control of the poor and the denigration of certain groups (Cohen 2005: xx).

Unsanitary conditions and disease were associated with poverty, crime, and immorality in 19th and early 20th century European and American cities, justifying sanitary reforms that

penetrated the daily lives of the poor and working classes. In the colonies, unsanitary conditions and disease were associated with spaces of the “native,” particularly the inner cities, and with disloyalty and potential rebellion (Chakrabarty 1992, 2002). Orientalist binaries separating clean and sanitary Europeans from unclean colonial Others usually led to colonial interventions in sanitation that were imposed from above through demolition, policing, coercion and punishment. These were often met with local resistance based on indigenous views of health and urban life (Hosagrahar 2005; McFarlane 2008b). Ultimately, with military and economic concerns taking precedence over social welfare in the colonies, colonial cities developed as fragmented and polarized landscapes. Spacious residential quarters with modern infrastructure networks were developed for Europeans and their Indian elite and upper-middle-class collaborators. On the other hand, “native” inner cities and poorer areas remained devoid of sanitary improvements (Chaplin 2011; Glover 2008; Hosagrahar 2005; McFarlane 2008b). Indian elites, even when involved in local government, also failed to prioritize city-wide sanitation provision (Chaplin 2011). After independence, these cities became sites of new kinds of modernist projects, and these fragmentations and polarizations increasingly evolved into a formal/informal divide. Sanitation divides became more entrenched in cities like Mumbai as the impetus for widespread sanitary reform dissipated with urban middle-classes increasingly able to protect themselves from disease by monopolizing state-provided urban services and access to modern medicine (Chaplin 1999).

Chakrabarty (1992) argues that while the attempts by colonial governments and elites to regulate and create orderly public spaces were rooted in discourses of the “natives” being indifferent to filth in public spaces and using these spaces in inappropriate ways, nationalist projects of social reform also sought to create clean and orderly public spaces, albeit through transformed discourses that appealed to civic consciousness and citizen-like behaviour.

People's practices have, however, continually challenged the realization of such projects in Indian cities. With regard to practices of open defecation, for the Indian middle classes and elites, these have increasingly come to mark the presence of the rural and the non-modern in the contemporary Indian city. Those who defecate in the open are often cast as uncivilized folk who need to be coercively disciplined into using toilets. These othering discourses in the contemporary Indian city have a powerful echo of the colonial, which closes off alternate possibilities of understanding people's sanitation practices as well as sustains and creates new fragmentations and polarizations in the urban landscape.

Chakrabarty (1992) – and following him, Kaviraj (1997) – have brought a postcolonial reading to the presence of filth in public spaces in India. They contrast the conception of public space based on modernist desires, civic consciousness and public order to the notion of the “outside” held historically in India. This “outside” was the opposite not of the “private” but of the “inside” and was viewed as a space that carried fears of miscegenation and dangers of offence, especially for people accustomed to living in a caste society. While care and attention to cleanliness might be lavished upon the home that was the “inside”, the street as the “outside” was a space that lacked any association with obligation and “did not constitute a different kind of valued space, a *civic* space with norms and rules of use of its own” (Kaviraj 1997: 98). This had consequences for behaviour in urban open spaces, and garbage, when thrown “outside” was understood to be thrown over a conceptual boundary. Kaviraj further argues that this historical conception of the inside/outside mapped onto the European modernist conception of private/public to produce a peculiar configuration of the modern, which moreover varied across classes as well.^{vi} For the poor and destitute, “public” gradually came to mean that which is not private; spaces from which they cannot be excluded by somebody's right to property; an “outside” that is a matter not of collective pride but of

desperate uses, sanctioned by the state through “a curious mixture of paternalism, obligation of the powerful to care for the destitute, and democracy” (Kaviraj 1997: 104-105). In this analysis, the use of public space in Indian cities and the presence of filth in them is understood as a reflection of the “plebianisation of public space” (Kaviraj 1997: 108), and the different conceptual maps of private/public among the rich and poor in Indian cities chart a very different practice of modernity. It is striking too that in the contemporary period, while the logics and imaginaries may well be different, there are legacies of this in the casting out of many sites, groups and practices of the urban poor as unsanitary and in need of punitive treatment (e.g. see Baviskar, 2003; Ghertner, 2008; McFarlane, 2008b).

The postcolonial analyses described above are useful in alerting us to different notions of public and private, of filth in public space and of what might be considered an “appropriate” or “inappropriate” use of public space. However, they also have serious limitations, particularly when they include shit in their discussion of filth and open defecation as one among many uses of public space by the poor. This fails to consider the nature of embodiment in practices of defecation that differentiates it from other “private” uses of “public” space by the poor. These analyses also suggest that the poor have a fixed conceptual map of public/private and a greater tolerance to filth, and while this is considered to be a consequence of their impoverished circumstances, there is nonetheless a tendency not to connect open defecation to the politics of urban informality, infrastructure and political economy. In the process, they also essentialize notions of filth held by the poor and ignore the efforts often made by them to create sanitary environments. We argue that to understand open defecation, a focused analysis of the relationships of the body to the diverse materialities of sanitation infrastructure in the unequal city is imperative.

Debates in urban political ecology are an important point of departure in exploring these relationships. Writings on urban metabolism (Gandy 2004; Heynen 2006; Heynen et al 2006; Swyngedouw 2004; 2006) approach the city as a metabolic process involving circulations and flows mediated through biophysical and social networks of bodies, infrastructures, and political economies, in which uneven power relations are deeply implicated. They direct attention to the uneven, fragmented and polarized urban environments – and the enabling and disabling environments (Heynen et al 2006) – that are produced through urban metabolic transformations, which refer to complex and contested processes of socio-environmental urban change. Here, power-laden processes structure relations of access to (and exclusion from access to) food, water, and so forth, linking individual bodies to urban social processes (Heynen 2006; Swyngedouw 2004). Everyday life in the city is thus understood as being constituted by entanglements of the social and technological across a variety of spatialities (Gandy 2004).

However, despite these important theorizations, there is still limited scholarship in urban political ecology that explores people's everyday experiences and practices in relation to infrastructure and that deepens our understanding of the relationships between the body, infrastructure and the city. Certainly, a growing body of literature offers a glimpse into the significance of the everyday in shaping experiences and practices around water and sanitation (Bapat and Agarwal 2003; Black and Fawcett 2008; George 2008; O'Reilly 2010; Page 2005; Swyngedouw 2004). Recently, a feminist political ecology approach has been brought to urban political ecology to show how everyday embodied experiences, processes of social differentiation and micropolitics over resources can complicate and deepen our analyses of water inequality in cities (Truelove 2011). There is also a growing body of work, of which Truelove (2011) is an example, examining the intersections between everyday life, political

ecologies, and infrastructure in the city in South Asia. This includes, for example, important studies of the movement, internment and experience of different sorts of urban waste (Gidwani and Reddy, 2011), the biophysical and political travels of water (Anand, 2011), or the relationship between water and citizenship (Truelove and Mawdsley, 2011). This literature has enriched our understanding of the everyday experience and multiplicity of exploitative urban political ecologies in South Asia and as such has been very helpful in formulating our own approach and arguments here (and see McFarlane, Desai and Graham, 2014). It is also part of an important wider effort to rethink urban political ecology from the urban global South (e.g. Lawhon, Ernstson, and Silver, 2014).

With some exceptions, however (e.g. Truelove, 2011), everyday sanitation practices and experiences in the making and unmaking of urban political ecologies and infrastructures, particularly open defecation, continues to command less empirical and analytical attention. We attend to this by examining the everyday embodied materialities of (open) defecation. By this, we refer to: (i) how open defecation emerges through everyday embodied experiences, practices and perceptions forged in relation to complex materialities of informality and infrastructure, and (ii) the embodied spatialities and temporalities of open defecation. To examine the former, we focus on three processes (which take us beyond toilet seat numbers to understand sanitation adequacy): the micropolitics of provision, access, territoriality and control of sanitation infrastructures; daily routines and rhythms, both of people (physiological routines and rhythms as well as those of daily living in informal settlements) and of infrastructures; and experiences of disgust and perceptions of dignity. There is a large literature on the centrality of patronage and vote-bank politics in the provision of tenure security and basic services (such as water and sanitation) to informal settlements (e.g. Chatterjee, 2004; Wit, 2010), however, we argue that there is a need to expand the analysis of

sanitation politics. Understanding infrastructure as constituted by a range of social relations allows us to attend to the micropolitics of infrastructure provision, access, territoriality and control within informal localities, how they structure people's everyday experiences and practices, and how they contribute to the emergence of open defecation. Here, the location of toilet blocks, the role of formal and informal caretakers as well as toilet users, the commodification or privatization of public sanitation, and social power relations such as age and gender, all play a role in shaping this micropolitics.

There is also a growing body of literature that examines the role of repair and maintenance in the working of infrastructures and the disruption and failure of infrastructure networks (Graham and Thrift 2007; Graham 2010). While this literature recognizes the significance of these processes for shaping everyday lives and possibilities in the city, there are few in-depth studies. In this paper, we attend to the routines and rhythms of use, repair, maintenance and breakdown of sanitation infrastructures in informal settlements and show how these shape people's experiences and practices, including open defecation, in crucial ways. Our emphasis on the embodiment of people's practices also leads us to attend to people's routines and rhythms as they intersect with the routines and rhythms of sanitation infrastructures.

A third set of processes that we examine involve experiences of disgust and perceptions of dignity amongst residents of informal settlements. Debates on disgust, filth and cleanliness show how sensory responses such as disgust have played a key role in the distancing of filth, including human excreta. While many regard disgust as an "evolved aversion to potential sources of disease" and thus automatic and unmediated by conscious thought, others like Mary Douglas (2002 [1966]) have viewed it as culturally mutable (Barnes 2005: 105). Writings also show that there are distinct historical variations in disgust to shit and in

responses to this disgust (Barnes 2005; Laporte 2000). There are also cross-cultural variations and Jewitt (2011) writes of faecophilic and faecophobic cultures, the former tolerating the handling of shit and the latter – which includes India – finding it abhorrent and ritually polluting. In India, the association of handling shit with so-called “untouchable” castes whose occupation was restricted to manual scavenging, that is, manually removing, carrying and disposing of human excreta, links abhorrence and disgust around human faeces with cultural notions of pollution and purity and a policing of social hierarchical boundaries (Jewitt 2011; on caste and manual scavenging see Thekaekara 2003). These experiences and notions of disgust – and the imagined “geographies of contamination” (McFarlane 2008b) they give rise to – have recently mobilized revanchist actions in Mumbai with the formulation of bye-laws that bring a police approach to open defecation and the city’s cleanliness. However, tracing subaltern rather than middle-class and elite experiences of filth reveal another geography of disgust and contamination.

Disgust has been taken seriously in sanitation programs such as Community Led Total Sanitation (CLTS), which deploys these emotions – indeed, produces them – to “trigger” behavioral change from open defecation to toilet use (Mehta and Movik 2010)^{vii}. However, contemporary sanitation literature unfortunately remains limited in its understanding of subaltern perceptions of cleanliness and filth, subaltern experiences of disgust and the everyday practices that emerge through these. We seek to take a step towards addressing this lacunae. By contrast, the literature on sanitation provides ample evidence of the indignity experienced by women when they are forced to turn to open defecation. However, this has also foreclosed any in-depth analysis into perceptions of dignity vis-à-vis defecation: the differentiation of these perceptions by age and gender, the variation across rural and urban geographies, their link to conditions of visibility, privacy and safety, their link to experiences

of sanitation infrastructures. As a result, we have scarce understanding about how perceptions of dignity shape practices of open defecation.

To examine the embodied spatialities and temporalities of open defecation, we propose “improvisation” as a useful analytic. This notion of improvisation is inspired by Abdoumalik Simone’s writings on urban practices in African cities. For Simone, improvisation involves practices through which bodies, infrastructures, objects, and spaces, are brought into various combinations and configurations that become a platform for providing for life in the uncertain city and generating stability. These practices facilitate “the intersection of socialities so that an expanded space of economic and cultural operation becomes available for residents of limited means” (Simone 2004: 407). Such improvisations are pursued around sanitation as well, for instance, when groups of residents without access to toilets come together to contribute time, money, material and labour to the construction of makeshift hanging latrines, or when groups of residents introduce lock-and-key arrangements on a public toilet block to restrict access and thus control the cleanliness of the toilets they use. However, such improvisations might not always be possible or the improvisations by one group might restrict access to sanitation infrastructures for another group. In such situations, people may turn to open defecation to fulfil their bodily needs and in this context, practices of open defecation themselves emerge as improvisations which involve devising the least vulnerable and most convenient configurations of the body, time and space. This not only reveals how people cope with lack of or limited sanitation, but also shows how particular practices of open defecation emerge, and the efforts and risks they entail.

Embodied Materialities of (Open) Defecation

Micropolitics of Provision, Access, Territoriality and Control

The experiences and practices of residents of Rafinagar and Khotwadi around fulfilling their bodily needs were shaped in significant ways by both the unevenness of sanitation provision in Mumbai, as well as the settlement-level micropolitics of toilet provision, access, territoriality and control. In Rafinagar, six toilet blocks – three public and three private – had been constructed over the years, thus providing one toilet seat for every 263 persons. While the official acceptable standard is to provide one toilet seat for every 50 persons – a number that emerged as part of the city’s Slum Sanitation Programme (McFarlane, 2008a) - our toilet surveys found that each toilet seat was used by many more, between 80-115 persons in most cases. While inadequate toilet numbers certainly meant that open defecation in Rafinagar was inevitable, the micropolitics of toilet access, territoriality and control was an important factor shaping people’s experiences and thus, the emergence of open defecation amongst certain residents and not others. Not only were all toilet blocks located in Rafinagar Part-1, but the distance of the three public toilet blocks from Part-2 and many parts of Part-1 too, the location of two of them in internal lanes, and the attempts by surrounding residents and/or informal caretakers to restrict access meant that these were territorialized and controlled in a way that effectively removed them from being truly public toilets. As a result, each block was accessible to residents from only a particular cluster of lanes in Part-1, and Part-2 residents as well as many Part-1 residents were effectively unable to access them at all.

By contrast, Khotwadi has 24 toilet blocks, which means that there is one toilet seat for every 55 persons. Given that this closely conforms to the official acceptable standard of one toilet seat for every 50 persons, one is apt to conclude that there should be no open defecation in Khotwadi on account of infrastructure. However, we observed a similar micropolitics of toilet territoriality and control in Khotwadi, with many of the blocks or some individual cubicles in them territorialized and controlled by groups of residents, thus making them

inaccessible to others. In the early morning hours, this led to longer queues at the other blocks, which were open to all. This, in turn, led many men from some of the neighbourhoods along the railway tracks to turn to open defecation along the tracks. This underlines the significance of understanding sanitation in terms of the micropolitics of toilet provision, access, territoriality and control.

As a result of the territorialization and control of the public blocks in Rafinagar Part-1, the only blocks that Part-2 residents could use were the three private pay-per-use blocks. However, two of these were at a distance from Part-2, and were thus not quickly accessible to its residents. In fact, one of these blocks was not even accessible to Part-1 residents at times since the toilet block operator and caretaker had full control over the block, and thus kept the block closed on days when they could not obtain water (an issue that was linked to the wider water crisis in the area). Moreover, Part-2 residents also sometimes found the third, nearer, private toilet block difficult to access due to the long toilet queues. Taslima, a resident of Part-2, explained her experience:

“When there are long queues then people shout at each other, no? Then the residents who live [near the private toilet block] complain about the people who go from here. They say there is such a big *maidan* (open field) there, why are you coming here?”

Equally significantly, the private pay-per-use toilet blocks were accessible only to those who were willing and able to pay the Rs.1-2 that these toilet blocks charged per use. The per-use charges (and in one block, monthly passes) were a form of control that determined who was able to access the toilet, including how many times, and who was not. With many families in Rafinagar, particularly in Part-2, earning Rs.100-150 a day as ragpickers, this form of control

over sanitation infrastructures led many to turn to open defecation, either on a daily basis or intermittently. Taslima explained that when possible she would use open space because “if I can save one rupee then my children can eat something more.” However, as discussed later, the spaces and routines of open defecation did not always allow Taslima to use open space. On such days she took her six-year-old daughter with her to the private toilet since the caretaker allowed children of that age to use the block for free when they came with their mother. If her daughter wanted to defecate at any other time, Taslima made her sit on a newspaper outside their house. In fact, many families in Part-1 and Part-2 who did not have access to any of Rafinagar’s public toilet blocks and whose financial circumstances were straitened, allowed children to defecate in the open since spending a minimum of Rs.30/month (Rs.1 per use) for each family member was just too expensive. One 14-year-old boy explained that he used open space because of “tension around money”.

Everyday Routines and Rhythms

Practices of open defecation emerge through everyday routines and rhythms, both physiological routines of the body as well as routines and rhythms of daily life in informal settlements, as they intersect with sanitation infrastructures in these settlements. These routines mean that large numbers of residents in Rafinagar and Khotwadi sought the use of toilet blocks in the morning hours. In the context of inadequate toilet numbers, this led to long toilet queues in Rafinagar during these hours. As a result, users were also pressurized to hurry up so that others could use the toilet. Our toilet surveys at Rafinagar’s public toilet blocks revealed that in one block, each of the men had an average of five minutes to answer nature’s call, and at another block, each had an average of 3.75 minutes. Many men came with their water-pots to use a particular toilet block and then, on seeing long queues or after waiting for a few minutes, departed to use open space outside the settlement. If they were

willing and able to pay, they would first check the queues at one of private pay-per-use toilet blocks. Many men could not afford to wait for long in toilet queues not only because of their body's physiological routines but also because of their routines of urban living. For many men, the latter not only involved getting to work on time but also the time-consuming and cumbersome task of fetching water on their cycles from long distances between 7-10 am, especially after December 2009 when municipal raids on "illegal" water supplies in the area led to a deepening water crisis (Graham, Desai and McFarlane 2013).

In the women's sections at these blocks, our findings varied only marginally, and each user had an average of just below 5 minutes to answer nature's call. We found rare instances of women from Rafinagar Part-1 resorting to open defecation, partly because given the social norms of modesty in a patriarchal society. Women were more likely to cope with this situation by controlling their bodies and its excretions, working around domestic routines (which often involved searching for, waiting for and filling water), and revisiting the toilet block when queues might have become shorter.^{viii}

However, there were women who turned to open defecation intermittently as a result of these routines and rhythms and their intersection with sanitation infrastructures. Consider Naina, a young woman who used one of Rafinagar's private pay-per-use blocks, but also at times used open space in the early mornings. Naina and her husband were among the more well-earning households in Rafinagar and she thus had both a willingness and ability to pay for using the private toilet. She worked with a religious charity, running tuition classes at her home for children in the mornings. However, "If the line is long, if it is urgent, if there is no time, then [one can] immediately go there," she had explained, vaguely waving towards the vast open space visible from her house. Her response captures how her practices of intermittent open

defecation were shaped by the intersections of her body's physiological rhythms ("if it is urgent"), her domestic and work routines ("if there is no time") and the nature of available sanitation infrastructures, in this case, the distance of the toilet block from her house and its inadequate toilet seats for meeting the collective rhythms and routines of the area's residents ("if the line is long").

Shakira, who had lived in Rafinagar Part-1 for more than 20 years, had explained that she often used to go to the nearby *maidan* (open field) when the toilet block she uses today used to be smaller:

"There would be a crowd there, people from all over the place used to come there. There would be ten people in the queue. We would get a stomach problem so we used to go to the *maidan*. The *maidan* was open, so sit down in comfort".

This notion of being able to defecate in comfort, without having to experience the bodily discomfort and pain of waiting in a queue to defecate, is clearly not that of the notion of luxurious comfort that is increasingly shaping residential toilet design in urban India (see Srinivas 2002 for an analysis of how bathrooms in middle-class Hindu homes have become showplaces of conspicuous consumption and display). Rather, this is the basic comfort of being able to satisfy rather than fight off the urge of one's physiological bodily routines and rhythms. Not being able to relieve oneself when one has the urge to defecate leads to abdominal pain and psychological stress, and regularly delaying defecation can also lead to chronic constipation (WHO-UNICEF 2004).

For Taslima in Rafinagar Part-2, her domestic routines – which involve being at home to take care of her young children while her husband goes to fetch water on his cycle between 7-10 am – led her to try and finish with her bodily needs early in the morning before her husband

leaves. At this time, the private toilet, which was also far from her house, had long queues, and in any case, since she was hard-pressed to pay daily for the use of a private toilet, she usually turned to open defecation at this time.

The routines and rhythms of the sanitation infrastructures are shaped by the frequency of cleaning, the time of the day when they are cleaned, the availability of adequate water for cleaning, the frequency and adequacy of their maintenance (such as repairing broken doors, removal of choke-ups, maintenance of the septic tank/aqua privy, etc) (all of which are in turn shaped by the practices and politics of municipal officials, municipal sanitation workers, local political leaders, toilet block caretakers, informal sanitation workers, etc), leading to intermittent practices of open defecation. For instance, most of the public toilet blocks in Rafinagar choked up and became entirely unusable for a few days every few months. While most women then turned to private pay-per-use blocks, many men and even many children turned to open defecation during this time.

In Khotwadi, the routines and rhythms of cleaning and maintaining the toilets were generally more regular and frequent than in Rafinagar since most of the toilets were territorialized and controlled by resident groups or looked after by local political leaders or CBOs. Serious disruptions in the workings of the toilets were therefore rare to find. In case of such disruptions, people temporarily resorted to other blocks since there are a larger number of toilet blocks in Khotwadi. As a result of this larger number of blocks, the physiological routines of the body as well as routines and rhythms of daily life were also generally fulfilled without having to resort to open defecation, except where the micropolitics of toilet provision, access, territoriality and control made this impossible. As discussed earlier, this

was the case only in the neighbourhoods near the railway tracks where men turned to open defecation.

Disgust and Dignity

Many women in both Rafinagar and Khotwadi talked about the toilets they regularly used, and how they got dirty, choked up and often stank unbearably, making them difficult to use. For instance, one resident of Rafinagar explained that the informal cleaner had not come since some days, as a result of which she had had to use half the water in her water-pot to throw on the worms breeding in the toilet so that they wouldn't climb onto her feet. Another resident explained that there were only four toilets for the women in the neighborhood, leading to frequent blockages. Still another resident explained: "When the toilet fills up, then it fills up to the top. There is no place to keep one's feet also, it becomes so dirty". Many women talked about how toilets got dirty and smelly because of practices of other women, particularly those who left sanitary cloths in the toilet. One woman explained: "It is shameful that women throw all this in the toilet. If we keep the toilet clean then it will remain clean. These women should understand that sanitary cloths should not be left like this. They should be wrapped in plastic and thrown directly into the garbage bin." In Khotwadi, one resident asked the researcher to go into the toilet block and experience for herself that it was impossible to even stand there because of the smell. These narratives show that the filth and smell in most shared toilets provoked disgust amongst residents who had to occupy these spaces while answering nature's call.

For some, the visual and olfactory experiences of bodily wastes in overloaded, poorly-ventilated and infrequently cleaned toilets provoked disgust to the point of it being a potentially sickening experience. One resident expressed this when she explained that she

would not be able to eat all day if she used the dirty public toilet block near her house in the morning, adding that she used a private toilet block a bit further away. Such options are not always available, however, and while it is certainly not clear how many men and women turn to open defecation because of dirty and smelly toilets, it is possible that rather than be disgusted by open defecation, some would actually turn to open defecation precisely because of disgust with the condition of shared toilets.

Jewitt (2011) argues that in rural areas, where there is plenty of open space and privacy, “people often choose open defecation in preference to using a smelly, mosquito-infested toilet”. Comparing her use of the *maidan* to the toilets in Rafinagar, Taslima explained that “in the *maidan* you don’t get a smell. The smell is bad in the toilet since it is closed.” While this reveals that when it came to smell, Taslima preferred the *maidan* to the existing toilets, she had to also factor in questions of privacy. Such choices then are of course more difficult in the city, which does not easily offer open space and privacy. But, the narratives explored here show that for residents of informal settlements, everyday geographies of disgust, contamination and the unsanitary city involve poorly-ventilated, irregularly-cleaned toilets that large numbers of people are forced to use without adequate access to water. While it is not entirely clear how often these experiences and geographies lead people to turn to open defecation, there is clearly a need for more sophisticated understandings in this direction.

Subaltern perceptions of dignity also play a role in shaping open defecation practices. Naina had shared her views on cleanliness and the role of personal responsibility in keeping oneself, one’s house and one’s neighborhood clean. In this context, the casual, matter-of-fact tone in which she mentioned her intermittent open defecation practices suggested that she did not consider this to be an undignified or humiliating practice. Given writings on urban sanitation

– which have repeatedly pointed to the impacts that open defecation have on women’s privacy, dignity and safety – as researchers we have perhaps come to expect that women informants will talk about open defecation only in ways that fit into these narratives. These narratives certainly emerged in Rafinagar as well, as we will later discuss in this paper. However, when Naina – and a number of other women in Rafinagar – mentioned open defecation in a casual, matter-of-fact tone, it was unsettling to us as researchers and provoked questions.

Clearly, open defecation is not a humiliating practice in all contexts. The humiliation associated with open defecation is, indeed, a historical construct. Srinivas (2002) writes about how bathing and defecation in rural areas in India were social activities until the late 1940s (though certainly segregated by gender). It was, in fact, considered to be quite appropriate to be sociable while bathing and defecating, and people “made a separation between the corporeal self and the social self, [thus] while the physical body engaged in evacuation or purification, the social self continued interaction unabated” (Srinivas 2002: 371). According to Srinivas, this “communal bond of defecation” was lost as villagers began to build individual toilets in their backyards; the social individual and the corporeal body fused into one, and notions of privacy and shame became associated with open defecation. While Srinivas seems to suggest that open defecation is uniformly seen as a shameful practice now, this is clearly questionable. Writings on rural sanitation, for instance, reveal that collective norms and behaviors can make open defecation acceptable (see for eg, Mehta and Movik 2010; Jewitt 2011).

In the case of recent migrants to the city from rural areas, it is indeed possible then that not everyone perceives open defecation as a humiliating practice in and of itself. Indeed, being

forced to use a disgustingly dirty toilet can be a challenge to one's dignity as well and one might prefer open defecation on these grounds as well. As Bhaskar Mukhopadhyay (2006) argues, toilet festivals organized by middle-class activists advocating improvements in sanitation in Mumbai's slums, link open defecation, humiliation, victimization and a lack of dignity (and are approvingly described as such by Appadurai 2004) in ways that are not necessarily shared by slum dwellers themselves. Rather than impose urban elite notions of dignity and humiliation onto urban subalterns, he argues that there is a need to examine attitudes that shape sanitation norms, more so because the rendering of certain defecation practices as unacceptable and humiliating can foreclose options. There is clearly a need for a better understanding of notions of dignity vis-à-vis open defecation. How do notions of dignity (and indignity) get linked to visibility, privacy, safety, disgust, and infrastructures, and how do they vary across age and gender?

Spatialities and Temporalities of Open Defecation

Although there were large areas of open space around Rafinagar, people did not “*just go in the open*” as presumed by the security agency's CEO quoted earlier. Rather, they spatially and temporally improvised so as to use open space in ways deemed most proper and safe in the context of prevailing social relations and norms. Open spaces were thus differentiated for their use for open defecation by different groups. While young children living in Rafinagar Part-1 went on the road outside the settlement, other children and most men of Part-1 walked across the road to the garden or *maidan*, a vast open space located behind one of the private toilet blocks (Figure 1). In Rafinagar Part-2, most young children used the adjacent *maidan* (also known as *kabrastan* since the municipal government had earmarked this land for a graveyard), beyond which rose the Deonar garbage dump, Mumbai's largest garbage disposal site. The youngest of children were often made to sit on newspapers and plastic bags just

outside the house because of fears (such as their getting bitten by aggressive stray dogs) associated with letting them defecate further away. Some men used the *maidan* / *kabrastan* as well.

For men and women, the Deonar garbage dump with its heaps of garbage provided a particularly suitable topography for creating gendered separations for open defecation (Figure 1). Men often used open spaces at the lower edges of the dump, especially along the water channel along the dump's western edge, while women walked up onto the garbage dump, finding spaces behind garbage heaps or in the ditches created by the dumping of garbage to shield themselves from prying eyes. These spatial improvisations thus involved cooperation between men and women. However, not everyone cooperated. There were many cases of women being harassed when they went to the garbage dump. Some residents recounted instances of young girls being raped. Salma explained the reasons for these cases of harassment:

“Our sons and husbands understand. That our mothers and sisters go. But [men] come from outside and harass us... They [drink] alcohol; they do *charas*, *ganja*, *solution*... Many rapes have happened. Some parents don't bring it out in the open to protect their honour; they are scared.”^{ix}

She went on to explain that these were men from other parts of Shivaji Nagar, the larger area comprising of an official slum resettlement site and various informal settlements. But it is possible that men from within Rafinagar also harassed women at the dump. Many residents mentioned alcohol and drug abuse amongst young men within Rafinagar and women recounted instances of harassment by such men, including at one of the toilet blocks.^x

Although using open spaces such as the *maidan* and *kabrastan* that were visible to more people might have at least prevented sexual assault, securing some kind of privacy for performing bodily functions was more important for women given the social norms of modesty in a patriarchal society. Most women tried to decrease the possibilities of assault by going to the garbage dump with other women and by going before 10-11 am after which garbage trucks began to ply the dump. Collaborations amongst women thus constituted social infrastructures necessary to safely fulfil sanitation needs. However, certain kinds of verbal and visual harassment were still not easily avoided. One woman resident explained that if one went alone, someone would “cover your mouth and carry you off”; this, she added, would not happen if two women went together although men might still pass comments and make obscene gestures. It would not be an exaggeration to say that at times some women took a chance on their safety in their search for privacy and to conform to social norms of modesty. Moreover, going on to the garbage dump to find privacy itself posed risks of being bitten by aggressive stray dogs, falling into deep ditches, and sinking into the garbage especially during the monsoons.



Figure 1. Spatialities of open defecation around Rafinagar (Source: Google Earth)

The spatial and temporal improvisations that constituted open defecation practices thus involved considerable effort, particularly by women. If these improvisations tried to minimize certain risks, then they also deepened other risks. Women who did not want to undertake the risks associated with going on to the garbage dump, used the *maidan* / *kabrastan* but only under the cover of darkness. However, as this involved controlling the body and its excretions, it made women vulnerable to various health-related risks.

Moreover, everyday life in informal settlements often involves coping with change in the unevenly developing city, over which residents have little control. Such changes can also profoundly disrupt practices of open defecation, requiring new improvisations that often created new risks and vulnerabilities. In November 2009, plans began for the scientific closure of the Deonar garbage dump. Receiving Mumbai's garbage since 1927, the garbage disposal site had been reaching the end of its life. Middle-class residents from surrounding areas had also protested against the air pollution caused by the vapors of decomposing garbage and the fumes caused by garbage burning by rag-pickers to extract metals. The municipal government thus handed the site to a private company for its closure. Salma explained how this had affected the use of this space for open defecation:

“The vehicles start to run [on the dump] at 6-7 am. They run the entire day. Till seven in the evening. Even at night sometimes... The road [on which the vehicles run] is high. Everything can be seen from above if someone is sitting below... If one is sitting then sometimes somebody will come and chase one away. If you've worn a *sari* then it is okay. But it is difficult in a *salwar* [a kind of loose trouser], there is no time to tie it also... First the [garbage] trucks used to come 'time to

time' [ie, at specific times]. Ever since it has become private there is more harassment. No matter where you look there is a vehicle."

The garbage dump was also being levelled by the private company for its conversion into a sanitary landfill and development as a green belt (Figure 2), and Salma explained that this too created difficulties since there were no longer heaps of garbage and ditches where one could shield oneself. Other women mentioned that whereas earlier they could go onto the dump till 10-11 am, with the coming of the private company's bulldozers, security guards and vehicles, they now had to go earlier in the morning, usually before 8 am. Amina now woke her 16-year-old daughter at 6 am daily to send her to the garbage dump so as to decrease chances of her being seen or harassed.

Taslina had begun to go to the dump before 6-7 am, but on many days she could not finish with her bodily needs this early. On such days she would walk over to a private toilet block around 10-11 am, after her husband returned from fetching water. She paid Rs.1 to use this toilet block. Both Taslima and her husband work alternately as rag-pickers on the garbage dump, earning Rs.100-150/day between them for their family of six. As mentioned earlier, Taslima took her 6-year-old daughter with her to the private toilet so that she would not have to pay separately for her as well. Their use of the private toilet was not about willingness-to-pay, as the World Bank and many development practitioners would like to portray it, but the inescapable need to fulfil the body's physiological needs in the context of the changing city around them, their domestic routines (some of which are shaped by the fragmentary and polarized geographies of water in Mumbai), the narrow toilet block options available to them, and their own deeply straitened financial circumstances. In a couple of years, the family will have to spend more on toilet access as their daughters grow up, even as they will have to explore other livelihood options with

the garbage dump's closure. The private block had also begun to charge Rs.2 in the men's section and so per-use charges were also likely to increase in the women's section in the future.

In mid-2010, the municipal government also began constructing a wall around the *kabrastan* to develop the graveyard. This would narrow the open space that children could use for defecation as well as that women could use under the cover of darkness. Several people pointed to this emerging enclosure, emphasizing the urgency of building a toilet block in Rafinagar Part-2.



Figure 2. The *maidan* / *kabrastan* near the shacks of Rafinagar Part-2 and the Deonar garbage dump in the distance with a bulldozer leveling the garbage heaps (photo by Renu Desai)

Elsewhere too, changes in the unevenly developing city often means a narrowing of open spaces affording privacy, safety and gendered separation. In Khotwadi, for instance, many men defecated along the railway tracks adjacent to the settlement, risking their limbs and lives everyday in the process of fulfilling their bodily needs.

Practices of open defecation emerge then from deep sanitation inequalities in the city. They involve considerable effort through spatial and temporal improvisations, and while these seek to ensure maximum privacy, safety and gendered separation, they also deepen urban inequalities in various ways, especially for women and children. Deepening inequalities also emerge from the effects of open defecation on health. NGOs working in Rafinagar noted the high incidence of diarrhoea, dysentery, and worms (for more on health and open defecation, see Black and Fawcett 2008; UN Millennium Project 2005). In Rafinagar, open spaces used for defecation are some of the only open spaces for children to play (as with the garden, *maidan* and *kabrastan*) and are also spaces where many adults and children spend long hours working as rag-pickers (as with the Deonar garbage dump).

Conclusion

In this paper, we have analyzed how open defecation emerges through everyday embodied experiences, practices and perceptions that emerge in relation to the materialities of sanitation infrastructures in the deeply fragmented and unequal Indian city, by tracing the micropolitics of access, territoriality and control of sanitation infrastructures; people's daily routines and rhythms; and people's sensory experiences of disgust and perceptions of dignity and humiliation. By interrogating these embodied materialities, this paper seeks to better articulate the multiplicity of relationships between the body and infrastructure in the metabolic city, and thus also expand our conception of the relationships between the body, infrastructure and the sanitary/unsanitary city. The manner in which these embodied materialities create precarious conditions for the fulfilment of basic bodily needs, or deny the fulfilment of these needs (regularly or intermittently), is a crucial dimension of urban poverty and inequality.

We have also interrogated practices of open defecation as spatial and temporal improvisations. These improvisations produce and reinforce inequalities through their implications for health and women's safety. As the Rafinagar case shows, these improvisations are also disrupted in the unevenly developing city, forcing people to chart out new improvisations. These disruptions and the new improvisations that emerge often deepen vulnerabilities and inequalities in various ways. Our tracing of these improvisations and experiences is not to simply reveal how people cope with lack of or limited sanitation, but to emphasize the different ways in which they emerge and take shape.

Indeed, practices of improvisation around open defecation are essentially coping mechanisms, and often reproduce and deepen inequalities rather than articulate political claims such as the right to sanitation and water. In this sense, improvisation perhaps lacks a politics. However, these improvisation practices and the difficulties and inequalities they produce are at times made visible in political claim-making. For instance, political demands for more toilets or for certain kinds of toilets or for toilets in particular localities could be strengthened by how persuasively and powerfully people narrate their everyday experiences, the efforts they make (ie, their improvisations) to fulfil their bodily needs in the absence of adequate sanitation, and the risks and vulnerabilities these produce. Moreover, improvisation can become political in different ways. This might be due to the state byelaws further disciplining improvisatory responses, or when residents become divided around lines of class, religion, ethnicity or caste in response to improvisatory practices pursued by different groups. While these improvisatory micropolitics of making and unmaking urban infrastructure have been largely neglected in debates on urban infrastructure and political ecology, we hope that we have shown that this constitutes a vital realm of urban life that demands more research focus, especially given that it is in these practices that more and more of urban life is lived.

This focus on people's everyday practices, experiences and perceptions in relation to sanitation infrastructures and open defecation also problematizes the bourgeois urban aesthetic which has recently mobilized a police approach to sanitation in Mumbai's public spaces and the relationships between the body, infrastructure and the urban environment that such approaches presume. Such an approach is part of a wider move across many Indian cities to reclaim the city from the poor and working classes for its middle classes and elites (see Baviskar 2003; Ghertner 2008; Sharan 2006), with many of these urban revanchist moves (Smith 1996) pitting "public" (read "middle-class") concerns around the environment against the "private" acts of the urban poor. While such approaches presume that the urban poor are unwilling to use sanitation infrastructures, are impatient and irresponsible in their use of them, and do not mind using open space because they lack any sense of disgust or dignity, our analysis challenges these presumptions.

The histories of colonialism and nationalism have continually produced an urban modernity in postcolonial cities wherein the relation between the body, infrastructure and the city has continually been rendered uncertain, precarious, shifting and disruptive for the majority of urban dwellers. This investigation of how open defecation emerges through the relations between the body and infrastructure in the fragmented and unequal Indian city, and how open defecation involves precarious spatial and temporal improvisations shows that in the current moment of a globalizing urbanism in cities like Mumbai, the uncertainty and disruption that marks this relation continues to be deepened.

We hope that it is evident that this focus on open defecation, informality, the body and infrastructure has implications for sanitation policy and practice. Many writings on urban

sanitation have, of course, pointed to how open defecation is prevalent in cities because of inadequate toilets. The recent emphasis on community participation in urban sanitation programs like the Slum Sanitation Program in Mumbai has partly emerged from an awareness that not only must more toilets be built in the city but that they must be functional and they must meet people's needs if they are to prevent open defecation. However, the outcomes of such programs continue to be calculated in policy circles in terms of number of toilet seats built even though in practice the outcomes are uneven in terms of creating adequate – that is, clean, well-maintained, easily accessible and affordable – toilets in the city (McFarlane 2008a; TARU & WEDC 2005). To create adequate sanitation for truly fulfilling the bodily needs of urban dwellers, sanitation policy and practice will have to engage with people's practices, experiences and perceptions in relation to sanitation infrastructures and (open) defecation. It is imperative that to bring an end to open defecation as well as provide truly adequate sanitation for all, sanitation policies and programmes need to be broadened to address the multiplicity of relationships between the body and infrastructure that we have discussed.

References

- Anand N (2011): 'PRESSURE: The PoliTechnics of Water Supply in Mumbai'. *Cultural Anthropology*. 26 (4): 542-564.
- Appadurai A (2004) The capacity to aspire: Culture and the terms of recognition. In Rao V and Walton M (eds) *Culture and Public Action* (pp. 59-84). Stanford: Stanford University Press
- Bapat M and Agarwal I (2003) Our needs, our priorities: Women and men from the slums in Mumbai and Pune talk about their needs for water and sanitation. *Environment and Urbanization* 15(2):71-86
- Barnes D S (2005) Confronting sensory crisis in the Great Stinks of London and Paris. In Cohen W A and Johnson R (eds) *Filth: Dirt, Disgust, and Modern Life* (pp. 103-129). Minneapolis: University of Minnesota Press
- Bartlett S (2003) Water, sanitation and urban children: The need to go beyond 'improved' provision. *Environment and Urbanization* 15(2):57-70
- Baviskar A (2003) Between violence and desire: Space, power and identity in the making of metropolitan Delhi. *International Social Science Journal* 175:89-98
- Black M and Fawcett B (2008) *The Last Taboo: Opening the Door on the Global Sanitation Crisis*. London: Earthscan
- Chakrabarty D (1992) Of Garbage, Modernity and the Citizen's Gaze. *Economic and Political Weekly* 27(10-11):541-547
- Chaplin S E (2011) *The Politics of Sanitation in India: Cities, Services and the State*. New Delhi: Orient BlackSwan
- Chaplin S (1999) Cities, sewers and poverty: India's politics of sanitation. *Environment and Urbanization* 11(1):145-158

- Cohen W A (2005) Introduction: Locating filth. In Cohen W A and Johnson R (eds) *Filth: Dirt, Disgust, and Modern Life*. Minneapolis: University of Minnesota Press
- Corbin A (1986) *Foul and the Fragrant: Odor and the French Social Imagination*, trans. Kochan M L. Cambridge, MA: Harvard University Press
- Douglas M (2002 [1966]) *Purity and Danger: An Analysis of Concept of Pollution and Taboo*. London: Routledge
- Gandy M (2004) Rethinking urban metabolism: Water, space and the modern city. *City* 8(3): 363-79
- George R (2008) *The Big Necessity: Adventures in the World of Human Waste*. London: Portobello Books
- Ghertner A (2008) Analysis of new legal discourse behind Delhi's slum demolitions. *Economic and Political Weekly* 43(20):57-66
- Gidwani, V. and Reddy, R.N. (2011) 'The afterlives of 'waste': notes from India for a minor history of capitalist surplus'. *Antipode*, 43:4, 1625-1658.
- Glover W J (2008) *Making Lahore Modern: Constructing and Imagining a Colonial City*. Minneapolis: University of Minnesota Press
- Graham S and Thrift N (2007) Out of order: Understanding repair and maintenance. *Theory, Culture and Society* 24(3):1-25
- Graham S, Desai R and McFarlane C (2013) Water wars in Mumbai. *Public Culture* 25(1):115-41
- Heynen N (2006) Justice of eating in the city: The political ecology of urban hunger. In Heynen N, Kaika M and Swyngedouw E (eds) *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism* (pp. 124-136). London: Routledge

- Heynen N, Kaika M and Swyngedouw E (eds) (2006) *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism*. London: Routledge
- Hosagrahar J (2005) *Indigenous Modernities: Negotiating Architecture and Urbanism*. New York: Routledge
- Jewitt S (2011) Geographies of shit: Spatial and temporal variations in attitudes towards human waste. *Progress in Human Geography*. Prepublished 14 February, 2011, DOI: 10.1177/0309132510394704
- Kaviraj S (1997) Filth and the public sphere: Concepts and practices about space in Calcutta. *Public Culture* 10(1):83-113
- Laporte D (2000) *The History of Shit*. trans. Benabid N and El-Khoury R. Cambridge, MA: MIT Press
- Lawhon, M, Ernsston, H. and Silver, J. (2014) 'Provincializing Urban Political Ecology: Towards a Situated UPE Through African Urbanism'. *Antipode*, 46:2, 497-516.
- McFarlane C (2008a) Sanitation in Mumbai's informal settlements: State, 'slum' and infrastructure. *Environment and Planning A* 40(1):88-107
- McFarlane C (2008b) Governing the contaminated city: Infrastructure and sanitation in colonial and post-colonial Bombay. *International Journal of Urban and Regional Research* 32(2):415-435
- McFarlane, C., Desai, R., and Graham, S. (2014) 'Informal urban sanitation: everyday life, poverty, and comparison'. *Annals of the Association of American Geographers* (accepted and forthcoming).
- MCGM (2006) *Greater Mumbai Cleanliness and Sanitation Bye-Laws*. Municipal Corporation of Greater Mumbai,
<http://www.mcgm.gov.in/irj/portal/anonymous/qlblaw> (last accessed November 2013)

- Mukhopadhyay B (2006) Crossing the Howrah bridge: Calcutta, filth and dwelling. *Theory, Culture and Society* 23(7-8):221-241
- Mehta L and Movik S (eds) (2010) *Shit Matters: The Potential of Community-Led Total Sanitation*. London: Practical Action Publishing
- MW-YUVA (2001) *Slum Sanitation Project: Final Report*. Mumbai: Municipal Corporation of Brihan-Mumbai
- O'Reilly K (2010) Combining sanitation and women's participation in water supply: An example from Rajasthan. *Development in Practice* 20(1):45-56
- Page B (2005) Naked power: Women and the social production of water in Anglophone Cameroon. In Coles A and Wallace T (eds) *Gender, Water and Development* (pp. 57-74). Oxford: Berg
- Sharan A (2006) In the city, out of place: Environment and modernity, Delhi 1860s to 1960s. *Economic and Political Weekly* 41:4905-4911
- Simone A (2004) People as infrastructure: Intersecting fragments in Johannesburg. *Public Culture* 16(3):407-429
- Smith N (1996) *The New Urban Frontier: Gentrification and the Revanchist City*. London: Routledge
- Srinivas T (2002) Bathing, defecation, worship, and social change in South India. *Space & Culture* 5(4):368-386
- Swyngedouw E (2004) *Social Power and the Urbanisation of Water: Flows of Power*. Oxford: Oxford University Press
- TARU & WEDC (2005) "Study of the World Bank Financed Slum Sanitation Project in Mumbai." Report to the Water and Sanitation Programme and the World Bank
- Thekaekara M M (2003) *Endless Filth: The Saga of the Bhangis*. London and New York: Zed Books

Truelove Y (2011) (Re-)Conceptualizing Water Inequality in Delhi, India through a Feminist Political Ecology Framework. *Geoforum* 42:143-152.

Truelove, Y., Mawdsley, E., (2011) 'Class and criminality: discourses of water and citizenship in clean, green Delhi'. In: Clark-Deces, I. (Ed.), *A Companion to the Anthropology of India*. Wiley-Blackwell, Malden, pp. 407–425.

UN Millennium Project (2005) *Health, Dignity and Development: What will it take?* Report of the Millennium Task Force on Water and Sanitation

WHO-UNICEF (2004) *Meeting the MDG drinking water and sanitation target: A mid-term assessment of progress*.

www.unicef.org/publications/.../who_unicef_watsan_midterm_rev.pdf (last accessed 18 April 2014)

Wit, J.D. (2010) 'Decentralised Management of Solid Waste in Mumbai Slums: Informal Privatisation through Patronage', *International Journal of Public Administration*, 33: 12, 767

We are grateful to three anonymous reviewers for their extensive and insightful comments on an earlier draft. The research upon which this paper is based was funded by the UK's Economic and Social Research Council (RES-062-23-1669).

ⁱ Under the byelaws, a person is liable to pay a fine of Rs.200 for urinating and Rs.100 for defecating in a public place.

ⁱⁱ We focus only on open defecation because most women from the informal settlements we studied did not resort to open space for urinating since bathing spaces inside their houses were usually used for this.

ⁱⁱⁱ See Sharan 2006 for the colonial roots of nuisance discourses. Also see Ghertner 2008 for how legal discourses of nuisance facilitates slum demolitions in Delhi.

^{iv} In 2001, 6.25 million people lived in 1959 "slum settlements," accounting for 54 percent of the city's population. Of this, the city's "non-notified slums" included 137 settlements with a population of 0.52 million (MW-YUVA 2001).

^v Personal interview, April 27, 2010. According to the CEO, the most common actions for which people were fined by his agency were spitting, littering, urinating and defecating.

^{vi} We do not think that Chakrabarty and Kaviraj mean this as an argument about cultural specificity. It is widely known that people threw garbage and emptied chamber pots on the streets in Europe and America until the 18th-19th century. However, while notions of "public space" linked to a bourgeois notion of "civic consciousness" became hegemonic in shaping the use of streets and open urban spaces in Europe and America (with indoor plumbing, city-wide sanitation systems, etc playing a role in this), Chakrabarty and Kaviraj seek to show that this was not the case in Indian cities.

^{vii} CLTS involves participatory mapping of neighborhoods in order to understand current practices of open defecation and sanitation more broadly, and then organizing communities into self-help groups to build and maintain toilets. A key strength of CLTS is precisely its concern with building sanitation solutions directly from everyday experience (see Mehta and Movik 2012).

^{viii} We did not trace other practices of defecation that women might resort to under such circumstances, such as defecating in plastic bags at home.

^{ix} *Charas* and *ganja* are made from the cannabis plant. “Solution” refers to Erazex, a typewriter correction fluid inhaled to produce intoxication.

^x Alcohol, tobacco addiction and drug abuse amongst young men in Rafinagar were mentioned by participants of our focus group discussion with a male youth group.